POSITION DESCRIPTION

POSITION TITLE: Research Assistant

POSITION NUMBER:

DEPARTMENT/UNIT: Clayton School of Information Technology

FACULTY/DIVISION: Faculty of Information Technology

CLASSIFICATION: Level A

FRACTION: Full Time (1.0), Fixed-Term (1 year, with option for 2 further years)

EFFECTIVE DATE: 1 May 2008

INCUMBENT: __________________________________________

SIGNATURE __________________________________________ DATE _______________________

APPROVED BY SUPERVISOR: Dr Jon McCormack

TITLE: __________________________________________ DATE _______________________

SIGNATURE __________________________________________ DATE _______________________

DEPARTMENT/UNIT HEAD: Professor Bala Srinivasan

TITLE: __________________________________________ DATE _______________________

SIGNATURE __________________________________________ DATE _______________________

DEAN/DIVISIONAL DIRECTOR: Professor Ron Weber

TITLE: __________________________________________ DATE _______________________

SIGNATURE __________________________________________ DATE _______________________
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ORGANISATIONAL CONTEXT

The Faculty of Information Technology comprises five onshore and two offshore schools and a number of research and project centres, and provides undergraduate and postgraduate degrees, conducts research and publishes academic material.

The Clayton School of Information Technology is one of five Victorian based schools of the Faculty which together deliver the Faculty’s core teaching and research programs. The School has some 70 academic and research staff and some 1,000 enrolled equivalent full-time students in undergraduate, postgraduate and research degree.

The Head of School is accountable to the Dean for the academic leadership and management of the School including direction and management of its programs and academic and general staff, and deployment of its allocated infrastructure and facilities.

The postdoctoral research position is funded by an Australian Research Council Discovery project entitled "Computational Creativity: an evolutionary ecosystem approach". This position is situated within the research Centre for Electronic Media Art (CEMA). CEMA is an inter-disciplinary research group, established to explore the creative possibilities of computer science. It is comprised of investigators from the Faculties of Information Technology, Art & Design and Arts (Music). For this position, the Research Assistant will work under the leadership of Dr Jon McCormack, the project chief investigator.

KEY RESULTS AREAS AND RESPONSIBILITIES

The Research Assistant will be expected to participate in all aspects of the research team's activities, including: discussions with project investigator and postgraduate students; the acquisition and processing of data; primary research from biological and computer science literature; design, implementation, and testing of software; the analysis and reporting of research results.

Working under the direction of his/her supervisor within the research team, the Research Assistant’s duties will be focussed on developmental modelling, ecosystem modelling, and on new algorithm development, implementation and testing. The Research Assistant will work cooperatively within the research team on all aspects of the research, but will take particular responsibility for the development of new research involving the adaptation of ecosystem models from biology to applications of creative design.

In collaboration with the research team, it is expected that the Research Assistant will annually submit their research results in papers to international conferences and journals over the course of the project. The Research Assistant will also work in close collaboration with other CEMA research staff, including academic staff, other Research Assistants and PhD students who are involved in researching complementary aspects of the project and projects funded by other research grants.

KEY SELECTION CRITERIA:

Essential

- A Bachelor's degree with Honours or equivalent qualification in Computer Science, Mathematics, Engineering, Biology or a related discipline.
- The applicant must hold or have submitted a PhD in any relevant area of Computational Creativity, Artificial Life, Adaptive Systems, Evolutionary Computing, Biological Modelling and Simulation, Computer Graphics or similar discipline by the date of appointment.
- Demonstrated the ability to carry out high quality applied research.
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- An understanding of Artistic Creativity and existing computational models in this area, Artificial Life and Evolutionary Systems methods, and how they may be successfully applied to problems in creative design.
- The ability to work as part of a research team and interact with members across the disciplines of computer science, music, visual art and design.
- Strong spoken English communication skills and good written English skills.

Desirable

- A PhD that combines sound technical research in the relevant areas (listed above) and applies it to the successful solution of problems in creative design.
- Experience with computational models of creativity, their implementation and criteria for testing; evolutionary computing methods such as genetic algorithms and genetic programming.
- Programming experience with C++ under Unix and Mac OS X operating systems.
- Understanding of aesthetic issues and design applications of technology.
- The ability to undertake independent research and to initiate new research ideas.
- The desire to solve practical problems arising in the creative arts.

OTHER JOB RELATED INFORMATION:

- The successful applicant will undertake research that addresses problems in computational creative discovery where computer processes assist in enhancing human creativity or may autonomously exhibit creative behaviour independently. The intention is to develop ways of working with technology that achieve creative possibilities unattainable from any existing software tools. These goals will be developed in the context of artistic creation, however the results may be applicable to many forms of creative discovery.

The aims of the research are to:

- Contribute to fundamental research on our understanding of artistic creativity in humans and machines;
- Develop new methodologies for creative design in digital media, based on evolutionary ecosystem dynamics, where the role of the computer shifts from that of tool to a synergetic creative partner;
- Develop a scientific basis for deriving and assessing such features; and
- Create a software system that demonstrates the practical application of these new methodologies in the test domains of two-dimensional drawing and three-dimensional form synthesis.

It is expected that this work will build on existing models developed by the chief investigator; software developed by the Artificial Life and Evolutionary Computing research communities; and algorithms developed from scratch within the project. The research may also involve some analysis of data, the design of numerical experiments, the numerical evaluation of new algorithms, and the analysis of algorithm performance. The successful applicant will participate in presentation of the research results at seminars and conferences, and will, as part of the research team, write scholarly papers for publication in academic journals.

Candidates must have experience of successful application of biologically inspired methodologies to creative domains. Preferably you will have some familiarity with graphics programming APIs such as OpenGL, Coin3D or Open Scene Graph. The desire to solve practical design problems of the kind arising in art & design applications is an important motivation for this research.

The positions will be funded at Research Assistant Level A, Step 3, under the Australian academic salary scales, for two and a half years. No funding is available to support relocation. As the research
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The team has been consistently successful in attracting new funding, it is envisaged that further research opportunities within the group may become available on successful completion of the initial project.

The position will be located at Monash University Clayton Campus.